CLAIMS

What is claimed is:

1.   A method for enhancing the control response of at least one drive train of a
      machine tool or production machine, wherein the at least one drive train
      includes a motor and a load coupled to the motor with backlash and/or
      elasticity, comprising the steps of:

      measuring a motor speed on the motor;

      measuring a load speed proximate to the load;

      computing a combined signal comprising a weighted measured motor speed
      and a weighted measured load speed; and

      controlling the motor speed with the combined signal.

2.   The method of claim 1, wherein the weighted measured motor speed is
      computed by multiplying the measured motor speed by a parameter (α) and
      the weighted measured load speed is computed by multiplying the
      measured load speed by a parameter ($1-\alpha$).

3.   The method of claim 1, wherein the parameter α has a value between zero
      and one.

4.   The method of claim 1, wherein controlling the motor speed includes regulating a difference between the combined signal and a desired speed value to zero.

5.   A method for enhancing the control response of at least one drive train of a machine tool or production machine, wherein the at least one drive train includes a motor and a load coupled to the motor with backlash and/or elasticity, comprising the steps of:

measuring a motor speed on the motor;

measuring a load speed proximate to the load;

computing a weighted difference between the measured motor speed and the measured load speed;

adding the measured load speed to the weighted difference to form a combined signal; and

controlling the motor speed with the combined signal.

6.   The method of claim 5, wherein the weighted difference is computed by multiplying an actual difference between the measured motor speed and the measured load speed measured motor speed by a parameter (α).

7.   The method of claim 6, wherein the parameter α has a value between zero and one.

8. The method of claim 5, wherein controlling the motor speed includes regulating a difference between the combined signal and a desired speed value to zero.